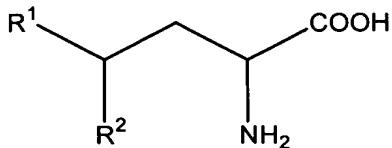


CLAIMS

1. A metal surface protective film-forming agent, comprising at least one α -amino acid, or salt thereof, represented by the following formula (1):



(1)

wherein R¹ denotes a saturated or unsaturated hydrocarbon group that has from 1 to 20 carbon atoms and may have at least one aromatic ring, and R² denotes a hydrogen atom or an alkyl group or aralkyl group that has from 1 to 10 carbon atoms; and wherein R¹ and R² 10 may link to form a ring.

2. The metal surface protective film-forming agent according to claim 1, wherein the α -amino acid is at least one α -amino acid selected from the group consisting of leucine, norleucine, norvaline and phenylalanine.

3. The metal surface protective film-forming agent according to claim 1, wherein α -15 amino acid is a salt form selected from the group consisting of a sodium salt, a potassium salt, a calcium salt, a magnesium salt, and an ammonium salt.

4. The metal surface protective film-forming agent according to claim 1, wherein R¹ is saturated or unsaturated hydrocarbon group that has from 1 to 10 carbon atoms.

5. The metal surface protective film-forming agent according to claim 1, wherein R¹ 20 is saturated or unsaturated hydrocarbon group that has from 2 to 5 carbon atoms.

6. The metal surface protective film-forming agent according to claim 1, wherein R² is saturated or unsaturated hydrocarbon group that has from 1 to 5 carbon atoms.

7. The metal surface protective film-forming agent according to claim 1, wherein R¹ and R² link to form a ring selected from the group consisting of cyclopropyl, cyclobutyl, and cyclopentyl.

8. The metal surface protective film-forming agent according to claim 1, wherein said aromatic ring is a phenyl or naphthyl.

9. A metal polishing solution comprising a metal surface protective film-forming agent according to claim 1 and one or more auxiliary materials selected from the group consisting of an oxidizing agent, a metal oxide dissolution agent and water.

10. The metal polishing solution according to claim 9, wherein the concentration of the metal surface protective film-forming agent ranges from 0.0001 to 5 moles per liter based on the content of the α -amino acid.

11. The metal polishing solution according to claim 9, wherein the concentration of the metal surface protective film-forming agent ranges from 0.005 to 1 moles per liter based on the content of the α -amino acid.

15 12. The metal polishing solution according to claim 9, wherein the concentration of the oxidizing agent ranges from 0.01 to 5 moles per liter and wherein the oxidizing agent is one or more water-soluble oxidizing agents selected from the group consisting of peroxides, nitric acid compounds, peroxy acid compounds, oxo acid compounds, and ozone.

20 13. The metal polishing solution according to claim 12, wherein the concentration of the oxidizing agent ranges from 0.05 to 3 moles per liter.

14. The metal polishing solution according to claim 9, wherein the concentration of the metal oxide dissolution agent ranges from 0.001 to 0.5 moles per liter wherein the metal oxide dissolution agent is one or more metal oxide dissolution agents selected from the group consisting of organic acids, amino acids, chelating agents, and biodegrading chelating agents.

15. The metal polishing solution according to claim 14, wherein the concentration of the metal oxide dissolution agent ranges from 0.005 to 0.3 moles per liter.

16. A method of polishing a surface of base material comprising:

polishing a surface of base material that has a recess portion on a surface thereof and

5 is provided with a metal film for wiring in the recess portion by means of a chemical mechanical polishing method with a metal polishing solution according to claim 9 thereby removing the metal film formed on the surface.

17. A method of manufacturing a semiconductor circuit comprising:

polishing solution when polishing a metal wiring buried in a recess portion of a

10 surface of a base material with a metal polishing solution according to claim 9 by means of a chemical mechanical polishing method to manufacture a semiconductor circuit.

18. A substrate for semiconductor circuit comprising:

a base material for substrate having a recess portion on a surface thereof; and

a wiring metal disposed in the recess portion;

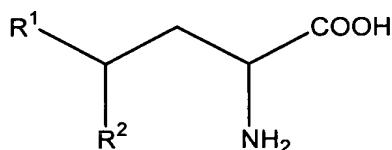
15 wherein a surface of the base material is polished by use of a metal polishing solution according to claim 9.

19. A semiconductor circuit comprising a substrate according to claim 18.

20. A method of forming a metal surface protective film comprising:

contacting a metal surface with one or more α -amino acids, or a salt form thereof,

20 represented by the following formula (1);



(1)

wherein R¹ denotes a saturated or unsaturated hydrocarbon group that has from 1 to 20 carbon atoms and may have at least one aromatic ring, and R² denotes a hydrogen atom or an alkyl group or aralkyl group that has from 1 to 10 carbon atoms; and wherein R¹ and R² may link to form a ring.